Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Service Rules for the Advanced Wireless Services H Block—Implementing Section 6401 of the Middle Class Tax Relief and Job Creation Act of 2012 Related to the 1915-1920 MHz and 1995-2000 MHz Bands	)	WT Docket No. 12-357

COMMENTS OF CTIA – THE WIRELESS ASSOCIATION®

I. INTRODUCTION AND SUMMARY

CTIA – The Wireless Association® ("CTIA")[1] respectfully submits these comments in response to the Federal Communications Commission's Notice of Proposed Rulemaking ("*NPRM*") seeking comment on service rules for the Advanced Wireless Services ("AWS") H Block.[2] These rules would make an additional ten megahertz of spectrum available for licensed, flexible mobile broadband use, spectrum that could play an important role in helping alleviate the capacity crunch facing the wireless industry.

As the Commission noted in the *NPRM*, it is critical that additional spectrum be made available for mobile broadband to "help ensure that the speed, capacity, and ubiquity of the nation's wireless networks keeps pace with the skyrocketing demand for mobile service."[3] As

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[1] CTIA is the international association of the wireless communications industry for both wireless carriers and manufacturers. Membership in the organization covers Commercial Mobile Radio Service ("CMRS") providers and manufacturers, including cellular, Advanced Wireless Service, 700 MHz, broadband PCS, and ESMR, as well as providers and manufacturers of wireless data services and products.

[2] *Service Rules for the Advanced Wireless Services H Block—Implementing Section 6401 of the Middle Class Tax Relief and Job Creation Act of 2012 Related to the 1915-1920 MHz and 1995-2000 MHz Bands*, Notice of Proposed Rulemaking, FCC 12-152 (2012) ("*NPRM*").

[3] *NPRM* at ¶ 1.

Americans increasingly use mobile devices to access an ever-growing number of applications and services on the Internet, the strain on wireless networks continues to mount. It is for this reason that the Middle Class Tax Relief and Job Creation Act of 2012 ("Spectrum Act") required the Commission to take a number of actions to make more wireless broadband spectrum available, including licensing and auctioning the H Block.[4] To meet the Spectrum Act's deadlines regarding the H Block, the Commission must act promptly, while at the same time engaging in a holistic, measured approach to spectrum planning.

Perhaps most importantly, the Commission must carefully evaluate the interference impact of new mobile broadband services in the H Block and develop a technical rules framework that assures all licensees will be fully protected. Particularly given the Spectrum Act's requirement that the Commission may not allocate or license the H Block if this band "cannot be used without causing harmful interference to commercial mobile service licensees in the frequencies between 1930 megahertz and 1995 megahertz," the technical rules associated with the H Block are the cornerstone to moving forward. As CTIA explains in these comments, the data surrounding technical guidelines to protect PCS operations require updating. Thus, CTIA urges the Commission to carefully evaluate the results from updated testing data and to develop a technical rules framework for the H Block that assures all licensees – both future H Block licensees and existing PCS licensees – will be fully protected from harmful interference.

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[4] *See* Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6401, 125 Stat. 156, 222-223 (2012); 47 U.S.C. § 1451 ("Spectrum Act").

II. THERE IS AN URGENT NEED FOR THE COMMISSION TO IDENTIFY AND ALLOCATE ADDITIONAL SPECTRUM FOR MOBILE BROADBAND SERVICES.

As the Commission observed in the *NPRM*, "[w]ireless broadband is a key component of economic growth, job creation and global competitiveness because consumers are increasingly using wireless broadband services to assist them in their everyday lives."[5] As a result, "[t]he explosive growth of wireless broadband services has created increased demand for wireless spectrum, which is expected to continue increasing, despite technological developments that allow for more efficient spectrum use."[6] As America's wireless companies increasingly deploy next-generation network technologies such as Long Term Evolution ("LTE"), studies show that strain on network resources – in particular, spectrum – will continue to grow at dramatic rates.[7]

By any metric, wireless broadband usage in the United States is growing at explosive rates. CTIA's recent Semi-Annual Survey revealed that reported wireless traffic in the first half of 2012 totaled 633 billion megabytes (MB), an increase from 526 billion MB in the second half of 2011 and 341 billion MB in the first half of 2011.[8] These findings by CTIA bear out the numerous expert projections regarding mobile data traffic:

- Cisco's Visual Networking Index ("VNI") projects wireless data traffic in 2016 will be 16 times the volume of traffic in 2011, and 100 times the volume of traffic

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5 *NPRM* at ¶ 9.

6 *Id.*

7 In 2011, a 4G connection generated 28 times more traffic on average than a non-4G connection, an ominous statistic in light of the various 4G deployments in progress by carriers throughout the country and the rapid 4G adoption by these carriers' customers. *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2011-2016* at 2 (Feb. 14, 2012), *available at* http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.pdf ("2012 Cisco Report").

8 CTIA Semi-Annual Wireless Survey, *at* http://files.ctia.org/pdf/CTIA_Survey_MY_2012_Graphics-_final.pdf.

in 2009.[9] This projection involves traffic on licensed spectrum alone, taking into account the off-load of other wireless traffic onto unlicensed spectrum. Thus, Cisco's VNI projections demonstrate the pressure solely on licensed spectrum.[10]

- Nokia Siemens Networks has estimated that by the year 2020, wireless customers globally will be using 1 gigabyte (GB) of data per day.[11]

- Alcatel-Lucent, meanwhile, has predicted 87 times growth of daily traffic on wireless networks in five years.[12] The company expects that 50 percent of that traffic will be on cellular networks, while the remaining 50 percent will be offloaded to Wi-Fi.[13]

- Ericsson data show that, worldwide, mobile data traffic doubled between the third quarter of 2011 and the third quarter of 2012.[14] In addition, Ericsson predicts that mobile data traffic will grow by 12 times between 2012 and 2018.[15]

Similarly, Cisco found, in its Visual Networking Index, that global mobile data traffic grew by 133 percent in 2011, in spite of global economic uncertainties and an increase in the amount of

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9 *See* Cisco VNI Mobile Forecast Highlights, 2011-2016, *at* http://www.cisco.com/web/solutions/sp/vni/vni_mobile_forecast_highlights/index.html#~Country.

10 *See* Cisco, *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2011-2016*, at 12-13 (Feb. 14, 2012) (discussing offload of traffic by dual-mode smartphone owners with Wi-Fi fixed internet access at home). *See also* Cisco, *Cisco Visual Networking Index: Forecast and Methodology, 2011-2016*, at 5 (May 30, 2012) ("The portion of mobile data traffic that has migrated from the fixed network is subtracted from the fixed forecast, and the amount of mobile data traffic offloaded onto the fixed network through dual-mode devices and femtocells is added back to the fixed forecast.").

11 Sue Marek, "Mobile Broadband Usage Is Skyrocketing-and So Are the Number of Projections," FIERCEWIRELESS (Feb. 27, 2012), *available at* http://www.fiercewireless.com/story/mobile-broadband-usage-skyrocketing-and-so-are-number-projections/2012-02-27.

12 *Id.*

13 *Id.*

14 Press Release, Ericsson, "Ericsson Mobility Report Shows Rapid Smartphone Uptake and Doubling of Mobile Data Traffic" (Nov. 21, 2012), *available at* http://www.ericsson.com/news/1659597.

15 *Id.*

mobile data traffic offloaded to the fixed network.[16] These findings emphasize the need for additional spectrum and for rapid action by the Commission.

The auctioning of additional exclusively-licensed, flexible use spectrum will play a critical role in ensuring that the wireless industry continues to provide the public with transformative innovations. As the Commission noted in the *NPRM*, this block is particularly well-suited for mobile broadband, as it is adjacent to the widely-deployed PCS band, which, according to the FCC, "is used by the four national providers as well as regional and rural providers to offer mobile service across the nation."[17] For this reason, CTIA is pleased to offer comment on how the Commission can best structure and allocate the AWS H Block to host mobile broadband services.

III. THE COMMISSION MUST ACT PROMPTLY TO AUCTION THE H BLOCK UNDER APPROPRIATE TECHNICAL GUIDELINES.

If the Commission is to meet its obligations under the Spectrum Act with respect to the H Block, it promptly must commence evaluation of the technical implications of the H Block's use for mobile broadband, and then establish without delay the licensing and service rules for this spectrum. The Spectrum Act requires that the Commission allocate and auction the H Block by February 22, 2015, subject to a determination that commercial operations on these frequencies would not cause harmful interference to Broadband PCS incumbents.[18] The Commission, in turn, has stated its aim to assign H Block licenses through competitive bidding in 2013.[19] These are aggressive deadlines, and their achievement requires prompt action by the Commission.

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16 *Id.*

17 *NPRM* at ¶ 1.

18 Spectrum Act at § 6401.

19 *NPRM* at ¶ 2.

The allocation and licensing of new mobile broadband spectrum is an ambitious undertaking under even the most ideal circumstances. In a letter filed by CTIA with the Commission and the National Telecommunications and Information Administration ("NTIA"), CTIA laid out a timeline for the identification and auction of spectrum identified in the Spectrum Act.[20] While that letter focused on different frequencies and not on the H Block, it demonstrates the many steps that need to be taken to successfully auction new mobile broadband spectrum. The Commission will need to adopt a Report and Order on service rules, complete a proceeding on auction rules, conduct an auction seminar and collect short form applications, conduct the auction, receive payments, and conduct a pleading cycle on the auction results.[21] All of these actions will require considerable time and Commission resources. Given the amount of work to be done, the Commission should act promptly to evaluate the interference impact of the H Block spectrum and to develop service and auction rules. As discussed in the next section, an evaluation of the interference impact of new mobile broadband services in the H Block will require time and testing, and the Commission must factor this in as it works to meet its statutory deadline of February 22, 2015.

Further, in other proceedings CTIA has highlighted the importance of a holistic, thorough, measured approach to spectrum planning.[22] As has been highlighted in other recent proceedings regarding allocation of new mobile broadband spectrum, there is considerable interplay among the various bands in the 2 GHz range. Commission action with respect to one

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[20] Letter from Steve Largent, President and CEO, CTIA – The Wireless Association® to FCC Chairman Julius Genachowski et al. at 6 (March 22, 2012), *available at* http://files.ctia.org/pdf/CTIA_Letter_to_FCC_Regarding_Implementation_of_Spectrum_Legislation_FINAL_signature.pdf.

[21] *Id.*

[22] *See, e.g.*, Comments of CTIA – The Wireless Association®, WT Docket Nos. 12-70 and 04-356, ET Docket No. 10-142, at 12 (May 17, 2012).

block could have a significant impact on the others. In the Commission's proceeding on 2 GHz spectrum, AT&T suggested that the Commission "engage in a holistic and comprehensive approach to band-planning in which the 2 GHz MSS frequencies would be addressed as part of a larger, coordinated band plan developed to make most efficient use of spectrum for terrestrial mobile broadband services."[23] Similarly, as the Commission develops rules for the H Block it must consider the protection of other spectrum bands and the other band plan options it will be enabling or foreclosing through the rules it adopts. To meet the February 22, 2015 deadline the Commission must begin this work now.

IV. THE COMMISSION MUST CAREFULY EVALUATE THE INTERFERENCE IMPACT OF NEW MOBILE BROADBAND SERVICES IN THE H BLOCK.

A critical element of wireless service quality involves the ability to minimize the risk of mobile-to-mobile interference. As the Commission correctly noted in the *NPRM*, "a key goal in this proceeding is to develop technical rules that will permit optimal uses of the H Block without causing harmful interference to commercial mobile service licensees in the 1930-1995 MHz PCS band."[24] Additionally, the Spectrum Act requires the Commission to ensure that existing PCS licensees are not adversely affected by any operations in the H Block. Specifically, the Spectrum Act provides that the Commission may not allocate or license the H Block if this band "cannot be used without causing harmful interference to commercial mobile service licensees in the frequencies between 1930 megahertz and 1995 megahertz."[25] For this reason, the technical rules associated with the H Block are the cornerstone to moving forward, but data surrounding technical guidelines to protect PCS operations require updating.

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23 Comments of AT&T Inc., ET Docket No. 10-142, at 4 (July 8, 2011).

24 *NPRM* at ¶ 33.

25 Spectrum Act at § 6401(b)(4).

When the Commission initiated its H Block proceeding in 2004, numerous parties expressed concern with harmful interference to the H Block. In its initial comments in that docket,[26] CTIA highlighted three distinct interference risks to PCS handsets. First, CTIA noted that the in-band operation of H Block signals has the potential to impair PCS reception through overload, which occurs when a receiver does not have a filter that can sufficiently block out unwanted strong signals at frequencies near the frequency of the desired signal. Second, there is the potential for intermodulation, which takes place when signals at two frequencies combine to generate a new signal at a third frequency, creating unwanted interference. Third, radio operations result in additional energy extending into adjacent frequencies, a phenomenon typically addressed by out-of-band emission ("OOBE") limits.

In 2004, CTIA contracted with two laboratories to evaluate the performance of PCS handsets in the presence of simulated H Block operations. The tests demonstrated that if H Block frequencies were used for PCS-like service, transmissions by mobile units in the upper two-thirds of the 1915-1920 MHz band would cause harmful interference to PCS receivers if operated at the levels proposed by the Commission in the 2004 NPRM.[27] Based on those results, CTIA suggested that the Commission adopt more stringent limits on H Block power and out-of-band emissions.

While the testing conducted by CTIA in 2004 yielded valuable observations about the interplay of H Block and PCS operations, more than eight years have passed since CTIA initially conducted its testing in the H Block. Because so much time has passed and wireless technologies have evolved, CTIA submits that the wireless industry must be permitted to conduct

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[26] Comments of CTIA – The Wireless Association®, WT Docket Nos. 04-356 and 02-353 (Dec. 8, 2004).

[27] *Id.* at 12-13.

updated testing of the technical parameters proposed by the Commission in the *NPRM*. CTIA understands from its member companies that testing has begun, but it may not be completed as of the February comment submission date and potentially not even by the March reply comment deadline.

In the intervening eight years, mobile technology has changed dramatically. The testing in 2004 focused on GSM and CDMA technology, both of which have been surpassed by new technology. Only a single UMTS device was available, and LTE had not even been standardized in 2004. Therefore, new testing must be performed, and should fully consider the technologies used in the PCS band (GSM, CDMA, UMTS, HSPA/HSPA+ and LTE) as well as the H Block (presumably LTE technology will be utilized in the new spectrum). CTIA urges the Commission to carefully evaluate the results from the testing data and to develop a technical rule framework for the H Block that assures all licensees – both future H Block licensees and existing PCS licensees – will be fully protected from harmful interference. Doing so will enable the Commission to meet its statutory obligation, encourage investment in this spectrum by wireless licensees, and enable the continued benefits of mobile broadband in the United States.

V. CONCLUSION

For the reasons set forth above, CTIA submits that if the Commission can develop rules that prevent harmful interference, the allocation and licensing of the H Block will play a crucial role in addressing the ever-growing spectrum needs of the wireless ecosystem. By permitting the industry to conduct updated testing of the H Block, the Commission will serve the public interest by facilitating a productive roll-out of new wireless service and continued high service quality for American consumers.

Respectfully submitted,

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